

Appendix 7: Iceland

Introduction

Entrepreneurship and innovation have increasingly become part of the education discourse, also in a Nordic context. This is due to the globalisation and pervasive societal changes (Moberg 2014). In the Nordic countries there is, in general, a great focus on implementing innovation and entrepreneurship in the education system to ensure that pupils and students acquire entrepreneurial competences. And with good reason!

Entrepreneurship education is an important factor in changing and developing society. Focusing on and aiming at obtaining more entrepreneurship education throughout the entire education system is based, among other things, on the economic belief that the Nordic countries need more entrepreneurs and innovative employees in order to increase job creation, new business ventures, and productivity. This is particularly urgent for outlying geographical areas and islands in the North.

Today the Nordic countries experience different socio-economic challenges, and the outlying geographical areas are especially marked by challenges such as lack of education possibilities and jobs, depopulation, and economic stagnation. This requires focus and a special effort.

This is particularly so in some Nordic islands who also experience a loss of high skilled labour as young people with high career ambitions leave the area and move to urban areas due to job shortage. Moreover, new companies and working places do not replace the ones that have disappeared and thus new jobs are not generated. One of the reasons could be said to be the lack of entrepreneurs and innovative employees.

Teaching children and young people the entrepreneurial skills during their education in local schools and educational institutions and supporting the local development of new business can help redress such challenges and stimulate economic growth in the local area.

The one-year pilot project, *Nordic Entrepreneurship Islands*, launched in November 2015, especially addresses the educational and new business venture challenges on seven selected islands. The project also addresses the opportunities and potentials arising from an increased focus on entrepreneurship education and start-up capital for student start-ups on the islands.

In order to define the opportunities and to forecast the potential development of entrepreneurship education and future potential candidates for receiving a student start-up Micro Grant, a mapping of the existing spread of entrepreneurship education at the upper secondary and tertiary education levels has been carried out on the seven islands. The entrepreneurial potential of each island is assessed on the basis of these results as well as on other research.

The full entrepreneurial potential is viewed as the number of young people partaking in entrepreneurship education and the expected amount of new companies/jobs created as an outcome of implementing different initiatives. The objectives of enhancing pupils and students with entrepreneurial competences and start-up capital are based on the rationale of increasing societal creativity and ideation. The ambition is that, in the long term, new companies will emerge as a result of these initiatives and more students will obtain skills and competences that will enable them to create and establish new companies.

The quantitative objective is to ensure that young people at different educational levels will engage in entrepreneurship education at least once during their education. As a whole, the project is about enhancing the islands' market position internationally and contributing to a sustainable development, growth and jobs through young people who remain in the local area and start up new businesses.

Methodology and Structure of the report

This report maps the present situation in Iceland with regard to aspects concerning entrepreneurship education on three levels: the macro, the meso and the micro level. Moreover, a Micro Grant was awarded to a promising student start-up in Iceland.

In order to map the status of entrepreneurship education in Iceland, data were collected by means of surveys in the form of questionnaires to respondents on three levels of the "entrepreneurship education ecosystem".

The three levels are:

- Macro level: The national strategy for entrepreneurship education in Iceland.
- Meso level: The strategy for entrepreneurship & innovation of educational institutions.
- Micro level: The number of pupils and students participating in entrepreneurship education at upper secondary and tertiary level.

The report is divided into chapters according to the three levels and the Micro Grant. As a background for the mapping, demographic data provided by Nordregio concerning population changes and employment situation in Iceland are shortly discussed.¹⁶⁸

Definitions of entrepreneurship and entrepreneurship education

In Autumn 2010, the Danish Foundation for Entrepreneurship formulated a definition of entrepreneurship with the aim of applying and incorporating it in a variety of educational contexts and of accommodating both a commercial entrepreneurial approach and an educational and competence-based approach. In 2013, a definition of entrepreneurship education was formulated.¹⁶⁹

Entrepreneurship is defined in the following way: "Entrepreneurship is when actions take place on the basis of opportunities and good ideas, and these are translated into value for others. The value thus created can be of an economic, social or cultural nature." (FFE, 2011). This definition shows that the creation of value can take different forms and may thus include intrapreneurship, social enterprise, cultural innovation, etc.

Entrepreneurship education is defined as: "Content, methods and activities that support the development of motivation, competence and experience that make it possible to implement, manage and participate in value-added processes." (FFE, 2013)

Both definitions are used as a frame to define the questionnaires and course descriptions on the meso and micro levels and thus set the frame for the mapping of entrepreneurship education on the seven Nordic islands.

Macro level

The Progression Model for Entrepreneurship Education Ecosystems in Europe from the European Commission (see Appendix A for further details) has served as inspiration for framing the data collection on the macro level. The model identifies four different stages in the development of a strategy for entrepreneurship education:

- Pre-strategy (based on individual initiative).
- Initial Strategy Development.

¹⁶⁸ <http://www.nordregio.se/> Nordregio is a leading Nordic research institute within the broad fields of regional development and urban planning.

¹⁶⁹ See www.ffe-ye.dk A Taxonomy of Entrepreneurship Education: Perspectives on goals, teaching and evaluation, 2015 for a detailed discussion of this.

- Strategy Implementation, Consolidation & Development of Practice.
- Mainstreaming.

The model also identifies five key areas in which a development of practice takes place during the development and implementation of a national strategy for entrepreneurship education. The questionnaire for the macro level is built on these five key areas:

- Developing the national strategy framework.
- The role of local and regional authorities.
- Implementing entrepreneurship education.
- Teacher education and training.
- Engaging with businesses and private associations and organisations.

The project manager in Iceland completed the questionnaire in the course of 2016. Wherever necessary, the project manager received expert knowledge from relevant government officials and people with knowledge in the area.

Meso level

To map the meso level, which constitutes the link between the national strategy level and the implementation level, that is the actual teacher practice, a questionnaire targeted the institutional management of educational institutions was designed. The questionnaire examines the strategy of entrepreneurship education at educational institutions at the upper secondary and tertiary education levels on four main areas:

- School strategy & form.
- Organisation.
- Competence.
- Practice.

The purpose of this survey at the meso level is to provide an overview of the existing measures related to a strategy for entrepreneurship education in the educational institutions as well as their experiences with activities related to entrepreneurship education.

The Danish Foundation for Entrepreneurship has not previously conducted a mapping at the meso level. As a continuation of the Progression Model for Entrepreneurship Education Ecosystems in Europe, the Danish Foundation for Entrepreneurship therefore developed the questionnaire specifically for the mapping of the meso level in this project. "A Quality Standard for Enterprise Education", developed by Centre for Education and Industry, University of Warwick, and "HEInnovate", a self-assessment tool for entrepreneurial higher education institutions, initiated by the European Commission, DG Education and Culture and the OECD LEED forum,¹⁷⁰ both served as inspiration for elaborating the questionnaire for the Nordic Entrepreneurship Islands project. The questionnaire is also framed by the definitions of entrepreneurship and entrepreneurship education, which were formulated by the Danish Foundation for Entrepreneurship.

The questionnaire was sent through the project manager in Iceland to the management of educational institutions on the upper secondary level and the tertiary level in Iceland.

Micro level

The micro level concerns the actual practice of teachers in educational institutions at the upper secondary level and vocational/VET and the content of the course descriptions at the tertiary level.

At upper secondary level and vocational/VET the data were collected by means of a questionnaire directed at the teachers. The two different types of teaching have been taken into consideration when designing the questionnaires. One questionnaire is used for the upper secondary level and another for vocational/VET.

The purpose of the survey is to map the number of pupils in upper secondary education and vocational/VET who in the school year 2015/2016 participated in education or in activities leading to increased competence levels in innovation and/or entrepreneurship.

The two questionnaires examine basic information about the teachers' evaluation of their school's policy on innovation and entrepreneurship education.

It also examines the teachers' evaluation of the teaching in entrepreneurship education, but the methods vary in the questionnaires for upper secondary education and for vocational/VET education. The questionnaire aimed at upper secondary level teachers focuses on four areas or "entrepreneurial dimensions". Please see "A

¹⁷⁰ <https://heinnovate.eu/>

Taxonomy of Entrepreneurship education” for further elaboration on the entrepreneurial dimensions.¹⁷¹

The four entrepreneurial dimensions examined are:

- Action.
- Creativity.
- Environment (outward orientation).
- Attitude.

The questionnaire for vocational/VET teachers focuses on the type of teaching, e.g. innovation or entrepreneurship (start-up).

For the purpose of mapping entrepreneurship education at the tertiary education level, data were collected in the form of descriptions of courses within innovation and entrepreneurship and the number of students following these courses during the academic year 2015–16. To examine how and to which extent entrepreneurship and innovation are implemented at the tertiary level, “Stjernemodellen” is used as a tool for the categorisation of courses (see Appendix B for further details).¹⁷²

The Star Model was developed by Øresund Entrepreneurship Academy with the purpose of identifying and quantifying entrepreneurship education courses in Danish universities. It was later updated by the Danish Foundation for Entrepreneurship in order to be applied for diploma and bachelor educations too, and was used by the Foundation during the last 6 years to map entrepreneurship education at the tertiary level in Denmark.

The model and method is used exclusively to identify the extent to which the course/subject focuses on entrepreneurship, it is not an evaluation or assessment of the quality of the course/subject as such.

At both the meso and micro levels, descriptive statistics were used in the treatment of the survey results.

Micro Grants and the innovation ecosystem on the islands

All islands in the pilot project have had the opportunity to award a Micro Grant to a promising student start-up. The Micro Grant is a small financial aid of DKK 25,000 that allows the student start-up to take their business further. A small case written about

¹⁷¹ <http://eng.ffe-ye.dk/media/555477/taksonomi-eng-2.pdf>

¹⁷² “Stjernemodellen” will henceforth be referred to as the Star Model.

the local start-up and Micro Grant recipient documents the effects, needs and possibilities for young people on the island after receiving a Micro Grant.

The project manager in Iceland has also provided information about the innovation ecosystem on the island in the form of a case.

All data were collected in the summer of 2016 and the preliminary findings were presented at a conference in November 2016 with the participation of different stakeholders from all seven islands. The preliminary findings were discussed, elaborated on and developed to customise and adjust the report and the forecasting about entrepreneurship education and Micro Grants on the seven islands.

Limitations of the methodology

Nordregio has provided the data for the overall demographic mapping of the seven Nordic islands. Nordregio was selected as the single source in order to ensure that the same method was applied to all islands and countries in question. Small variations between data may, however, occur when our data are compared with local statistics or surveying methods.

The desk research regarding the macro level is based on questionnaires, which have been answered by the responsible project manager on the island. Whenever answers were missing or elaboration was needed, a few additional questions were sent per email to the responsible project manager on the island. A few data were collected from other sources as well. The way in which the questionnaire was answered differs from island to island. Some have answered in more detail than others and also with different strategic knowledge behind the answers. The data given about each island/country are therefore not always equivalent, because they depend on the sources and on which information was available.

When it comes to the meso and micro levels, the percentages of participating institutions and participating teachers also vary from island to island. This mapping is based on the responses received. The mapping may therefore give an inaccurate picture of the actual circumstances on the islands, because it is not possible to know whether entrepreneurship education exists on educational institutions that did not participate in the survey. The actual situation on the individual islands when it comes to the existence of entrepreneurship education may therefore be different than what is communicated in this report.

As entrepreneurship education is a complex subject matter involving many levels of society and many stakeholders, it is not possible to give the full picture of the situation on each island regarding the strategies for entrepreneurship education by means of questionnaires distributed to a few key persons.

Furthermore, the report does not provide any conclusion about the maturity level of the individual islands/countries regarding a national strategy for entrepreneurship education. The Progression Model for Entrepreneurship Education Ecosystems in Europe (Appendix A) offers descriptions of a development of practice on each key area and thus allows the islands to evaluate the maturity stage of their own entrepreneurship education ecosystem, and at the same time the model suggests possible ways to further develop this ecosystem.

This report maps aspects of entrepreneurship education activity on different levels of society and thus depicts the different aspects of the entrepreneurship education ecosystem on each individual island. This makes it possible to draw conclusions about the potential of each island and define the key actors useful in the future development of the specific island.

The juxtaposition of seven such different islands caused some problems from a methodological perspective as differences in area size, population size and constitution are so pervasive and had to be taken into account whenever possible. Still, it was of course not possible to account for all differences between the islands.

Demographics

This chapter describes the main demographic development in Iceland in the recent period. This will serve as background for the mapping of the situation in Iceland and for the suggested measures to stimulate growth. See Appendix C for tables on population and age structure as well as labour market for the seven islands participating in the Nordic Entrepreneurship Islands project.

Population and age structure

Like the other Nordic countries Norway, Finland, Denmark and Sweden, Iceland experiences a growth in the total population. The growth (2009–2015) is caused especially by an increase in the population aged 25+ (4.2%) compared to an increase in the population aged 0–24 (0.9%). The Icelandic population growth is not caused by an increase of persons aged 0–24 years, but an increase in persons aged 24+ and in persons aged 65+.

Labour market

The employment rate has been increasing slightly during the last 5 years and is with 81% (2013) higher than the other Nordic countries – and second best compared to the other islands in this mapping. The general unemployment rate has improved considerably (25%) between 2009 and 2013, when it was 5.4%. And the youth unemployment rate, although it is higher than the general unemployment, has improved by 15% between 2009 and 2013, when it was 13.6%. To sum up, the employment situation is rather positive in Iceland, although attention should still be paid to youth unemployment.

Education level

The attainment of a tertiary education of the Icelandic population aged 25–64 has grown from 39,600 to 60,800 in the period 2003–2014, that is, an approximate 50% increase. In the same period the share of persons leaving school with a secondary education has grown from 53,900 to 59,300, corresponding to an approximate 10% increase, and the share of persons leaving school after the primary school level has changed from 48,700 to 43,900, corresponding to an almost 10% decrease.¹⁷³

Macro level

Entrepreneurship education requires efforts on several levels to be successfully implemented in a country's education system and to have a societal impact. Measures need to be taken at both the policy level and at the implementation level with the involvement of, and collaboration with, key actors from all aspects of society. The immediate responsible actors for entrepreneurship education are actors at macro level (policy makers) who provide the framework for working in the area, actors at meso level (school management), who decide how to implement entrepreneurship education in their respective educational institution, and actors at micro level (teachers), who provide the entrepreneurship education in practice.

The private sector, e.g. private companies and organisations, is also essential, because they represent the labour market. The collaboration between educational institutions and the private sector helps shape efforts in the area and, again, influences policy makers to provide policies that will sustain these efforts.

¹⁷³ <http://www.statice.is/statistics/society/education/educational-attainment>

As entrepreneurship is recognised as an important factor in a changing and developing society, the last decade has witnessed an increasing focus on developing strategies for entrepreneurship education in European countries. Some of the Nordic countries are among the frontrunners and have well-established structures at national level. Still, it takes a lot of time and patience to reach educational institutions in every region of a country.

This chapter will look at existing initiatives and measures at the macro level in Iceland. The desk research is based on information obtained from the island by means of a questionnaire.

The questionnaire provides data on five main areas, which correspond to the five key components of the entrepreneurship education ecosystem. Ideally, a national strategy for entrepreneurship education focuses on developing action on these five key areas, according to the European Commission:

- Developing the national strategy framework.
- The role of local and regional authorities.
- Implementing entrepreneurship education.
- Teacher education and training.
- Engaging with businesses and private associations and organisations.

As action and measures are developed in these five key areas, the entrepreneurship education ecosystem goes from one maturity stage to the next. The Model identifies four maturity stages in the development and implementation of a national strategy for entrepreneurship education:

- Pre-strategy (based on individual initiative).
- Initial Strategy Development.
- Strategy Implementation, Consolidation & Development of Practice.
- Mainstreaming.

The Progression Model for Entrepreneurship Education Ecosystems in Europe from the European Commission can be viewed in detail in Appendix A.

Developing the national strategy framework

In Iceland, there is a cross-ministerial involvement, non-formalised however, to promote and develop entrepreneurship education. The two ministries involved are the Ministry of Education, Science and Culture and the Ministry of Industry & Innovation. However, Iceland has no national strategy for entrepreneurship education, no national definition of entrepreneurship and no nationally approved goals for EE. Several initiatives like the public initiative Innovation Center Iceland (NMI), which is involved at the strategic level, and private actors like Business Iceland, Federation of Icelandic Industry (SI), Arion Bank, Eimskip, Landsvirkjun, IKEA, Elko and JA Iceland are involved to a “Medium” degree at the national level. For many years, there has primarily been a bottom-up approach to develop entrepreneurship education activities in Iceland, primarily through private actors. In 2016, JA Iceland was established and on its Board are many of the above-mentioned key stakeholders. The national budget for EE in 2015 was EUR 46,000.

The role of local and regional authorities

Innovation Center Iceland is the national entrepreneurship centre on the island, financed through both public and private funds. Icelandic ecosystem initiatives when it comes to supporting start-up activities are incubators as well as innovation and start-up centres, which offer possibilities for coming entrepreneurs. The most important ones are StartUp Reykjavik, StartUp Energy Reykjavik, and Innovation Center Iceland. Innovation Center Iceland offers FabLabs and office space for start-ups. These initiatives are for start-ups in general and not exclusively for student start-ups.

Implementing entrepreneurship education

At present, there are no nationally approved objectives for entrepreneurship education in Iceland. And entrepreneurship education is implemented in both secondary and tertiary education in Iceland, although it is far from being implemented at all educational institutions. In some secondary educational institutions, entrepreneurship education is implemented in the form of Company Programme run by JA Iceland. And there are several courses in EE at the tertiary education level. There is no formal entrepreneurship education programme for primary schools, but during the last 20 years an innovation competition has been available to primary schools. Icelandic schools and educational institutions teach entrepreneurship education primarily as a method at the primary level and primarily as a subject at the upper secondary and tertiary levels.

Teacher education and training

There is very little teacher training in entrepreneurship education in Iceland, only a short teacher training provided by JA Iceland for Company Programme and national guidelines about entrepreneurship education for teachers.

Engaging with businesses and private associations and organisations

Without a national strategy, it has mainly been private actors, e.g. private businesses and organisations, who have driven the development of entrepreneurship education in Iceland. They provide funding and are involved on the area for various reasons, e.g. future recruitment, the role of business in entrepreneurship education, and publicity or CSR. The involvement of private businesses and organisations in the area of entrepreneurship education is on a “Medium” level.

Meso level

It requires a strategic and organisational overview of school management to include entrepreneurship education in the normal education of the school or educational institution. School management (meso level), however, provides the very important link between a national/regional strategy level (macro level) and implementation (micro level) in the form of teachers, who teach entrepreneurial skills to pupils and students. The meso level has often been overlooked, or given less attention, in a country's combined efforts to develop and implement entrepreneurship education. But contributing to a (new) ideal of education where students learn to act in an entrepreneurial and innovative way is not only a pedagogical and didactic exercise, it is also a managerial and organisational practice.

In order to map the meso level of the island, and make the link between strategy and practice, a survey was sent to the school management of schools and institutions in Iceland. The survey examines four main areas: School strategy & form, Organisation, Competence and Practice. The purpose of the survey is to provide an overview of the existing measures concerning a strategy for education in Innovation & Entrepreneurship in educational institutions, or the experience with activities related to innovation and entrepreneurship education in schools and institutions.

The purpose of the survey is to map, not evaluate, the state of affairs of educational institutions when it comes to their experience with and strategies for education in innovation and entrepreneurship.

Strategy & Form

This area relates to background, motivation, challenges, objectives, common understanding, communication and evaluation.

29%, or 12 of 41, educational institutions at the upper secondary and tertiary level in Iceland have participated in the survey. Half of these institutions state that they have a strategy for entrepreneurship. The institutions are:

- Háskólinn á Bifröst – Bifröst University.
- Framhaldsskólinn i Vestmannaeyjum.
- University of Iceland.
- Listaháskóli Íslands / Iceland Academy of the Arts.
- Framhaldsskólinn í Austur-Skaftafellssýslu.
- Menntaskólinn í Reykjavík.

The institutions without a strategy participating in the survey are:

- Hólar University College.
- Agricultural University of Iceland.
- Keilir Academy.
- Menntaskóli Borgarfjarðar.
- Fjölbautaskólinn við Ármúla.
- Flensburg.

The schools' plan and goals for development of entrepreneurship education

3 of the 6 educational institutions with a strategy have a precise plan for implementation of the strategy. One institution only has a plan for following up and revising the strategy on a continuous basis. Two institutions have created a common frame of understanding of entrepreneurship education and how to practise it. None of the institutions have communicated the frame and plan clearly across the educational institution (to teachers, students and other stakeholders such as cooperating partners outside the institution).

Management of 5 of the 6 institutions with a strategy has also set concrete targets and goals for development of entrepreneurship education.

5 out of 6 institutions have set the following targets and goals:

- Cooperation between teachers and local businesses, public institutions and organisations in relation with entrepreneurship education.
- Teaching in entrepreneurship (learning objectives).

4 out of 6 institutions also have the following targets and goals:

- How innovation and entrepreneurship shall be part of the teaching (e.g. as special courses and/or integrated in every-day teaching).
- The development of curriculum so it contains learning objectives and competences for innovation and entrepreneurship.

Only 2 of the 6 institutions with a strategy have these targets and goals:

- The establishment of project weeks in innovation & entrepreneurship.
- Continuing education of teachers in teaching innovation & entrepreneurship.

No strategy but entrepreneurship activities

Although 6 out of 12 educational institutions in Iceland have no entrepreneurship strategy, the institutions without a strategy state that there is nevertheless entrepreneurship teaching and/or activities related to entrepreneurship taking place at their educational institution. All of them have activities such as teaching in innovation (students are being taught how to start a business, or they are being taught in new and innovative ways). They also have students working with projects that bring them in contact with the local community. Moreover, two institutions have collaboration with the local business industry concerning students' education and further working life/career.

Importance of strategy and education in entrepreneurship

On a scale from 1 to 5 data from Iceland show a mean of 4.27 concerning the statement "It is important that my educational institution formulates a strategy for education in innovation & entrepreneurship".¹⁷⁴ A slightly lower mean (3.91) is found concerning the

¹⁷⁴ 1 = very much disagree, 2 = disagree, 3 = neither or, 4 = agree, 5 = very much agree.

statement "It is relevant for all students at my educational institution to be taught innovation and entrepreneurship".

Although all educational institutions with and without a strategy agree that it is important to formulate a strategy for innovation & entrepreneurship, there is a small difference between them. The institutions with a strategy (mean: 4.6) emphasise the importance of formulating a strategy a bit more than the ones without a strategy (mean: 4.0). It is interesting that the institutions without a strategy (mean: 4.0) consider it a bit more relevant that all their students are being taught innovation & entrepreneurship than the ones with a strategy (mean: 3.8). Although such considerations are beyond the scope of this mapping, this result may indicate that even educational institutions without a strategy on the area are preoccupied with ideas about learning similar to the ideas inherent in entrepreneurship education..

Importance of goals for entrepreneurship teaching

Most of the educational institutions (9 out of 12), 4 with and 5 without a strategy agree that goals for education in entrepreneurship should be set to strengthen students' interest in their further education and career and students' interest in becoming an entrepreneur/starting a new business. Less (3 with a strategy and 2 without a strategy) agree that they should set goals to prepare students better for working life.

Two thirds of the 12 institutions, 5 with and 3 without a strategy, agree that goals for education in entrepreneurship should be set to strengthen the cooperation between the educational institution and the local society. 7 out of 12 institutions (4 with and 3 without a strategy) agree that goals should be set to boost the development of the local community, for instance by contributing to new businesses through the skill development of young people.

Half of the institutions (both with and without a strategy) agree that goals should be set to upgrade teachers' skills within entrepreneurship teaching. Only two of the institutions with a strategy and none of the institutions without a strategy agree that there should be goals to fulfil new national/regional policy in the area of entrepreneurship education or to decrease the student dropout rate.

External network

All of the 12 institutions in the survey provide their students the possibility of establishing contact with the institutions' external network, some in more ways than others.

Two thirds (4 institutions with and 4 without a strategy) have exchange/trainee service in local businesses/organisations and guest lectures given by local business people, entrepreneurs or others. 3 institutions with and 5 without a strategy have visits to companies, organised by the educational institution. 2 of the educational institutions

with a strategy also have competitions at their educational institution, where external contacts function as judges.

None of the institutions without a strategy provide their students with this possibility.

Half of the institutions in the survey have subject/project weeks or -days in cooperation with external partners (2 institutions with and 4 without a strategy) and one third of them have workshops in cooperation with external partners (3 institutions with and 1 without a strategy).

Involvement from school governing body and local businesses

There is a small difference between the institutions with a strategy and the ones without when it comes to the degree of involvement of school management and local businesses as a resource in the work with entrepreneurship education. On a scale from 1 to 5,¹⁷⁵ the institutions with a strategy have an involvement "to some extent" of both the management (mean: 4.0) and the local businesses (mean: 4.2). In the institutions without a strategy, the involvement of the management is either "to a small extent" or "to some extent" (mean: 3.2), and the involvement of local businesses is between "not at all" and "to some extent" (mean: 3.0).

Organisation

This area is related to topics such as resources, structures and expectations.

Resources, structure and expectations

Two of the educational institutions in the survey (without a strategy) have no resources at all earmarked to entrepreneurship education. The rest of the educational institutions in the Icelandic survey have resources earmarked to entrepreneurship education, but there are differences as to what and how much.

Two thirds of the educational institutions have earmarked time as a resource (5 institutions with and 3 without a strategy). Half of the institutions (3 institutions with and 3 without) have earmarked other resources such as staff with knowledge and expertise on the area. Half of the educational institutions with a strategy have also earmarked financial resources to the area of entrepreneurship education. Only one of the educational institutions without a strategy has done the same. A coordinator for entrepreneurship teaching, who has the full backing and practical support from the management and who

¹⁷⁵ 1 = not at all, 2 = to a small extent, 3 = neither or, 4 = to some extent, 5 = to a high extent.

is part of the management, has been appointed by two of the institutions with a strategy and one of the institutions without a strategy.

Like most of the educational institutions in the survey (82% of the participating educational institutions on all islands), entrepreneurship teaching is to some degree a part of the school timetables and the annual teaching plans at all educational institutions in Iceland. However, none of them require from the teachers that they include entrepreneurial learning objectives in their daily teaching and activities. Also, almost none of them (only one) require that the teachers describe in their annual plans how they integrate entrepreneurship in other subjects.

In half the institutions (3 with and 3 without a strategy) time has been allocated to entrepreneurial teaching courses of a longer duration, for instance project weeks, optional subjects, etc. Two thirds of the educational institutions in Iceland have not communicated their expectations to the teachers when it comes to where, when and how entrepreneurship teaching should be integrated in their teaching practice at the educational institution. However, 7 out of 12 institutions (3 with and 4 without a strategy) use a feedback system, which ensures that the teachers follow up on the pedagogical goals and objectives.

Management at half the educational institutions (4 with and 2 without a strategy) supports dialogue and cooperation between teachers from different disciplines through common facilities across the educational institution's subdivisions. A third of the institutions (half of each group) support by means of cross-curricular teaching and/or interdisciplinary project groups and dialogue and co-decision between teachers and students. One of the institutions without a strategy has at present no particular structures for such a dialogue and cooperation.

Competence

This area is about topics related to qualification, knowledge sharing, and pedagogics and cooperative relations.

Plan for teacher competence development

When it comes to a plan for teacher competence development, we see some differences between the 6 educational institutions with a strategy and the 6 without. Half of the institutions without a strategy currently have no plan for competence development and knowledge sharing within entrepreneurship education. All of the institutions with a strategy, however, have a plan to some extent. In 4 of them the plan for competence development manifests itself as a cross-curricular cooperation between teachers within the subject of entrepreneurship, and two of them practise competence development

through knowledge sharing about entrepreneurship teaching and through special networks. This is only the case for one of the institutions without a strategy.

Experimenting with teaching forms

All the institutions in Iceland allow their teachers to experiment with teaching forms in one way or another. Half of the institutions (3 with and 3 without a strategy) allow the teachers to experiment with teaching forms through project work / feature weeks or - days. Almost all the institutions with a strategy (5 out of 6) also allow teachers' cooperation with businesses. Only two of the institutions without a strategy allow this. 4 out of 6 institutions with a strategy have cross-curricular feature periods where the teachers can experiment. Only one of the institutions without a strategy provides this possibility. In one of the institutions with a strategy the management states that "teachers can experiment with teaching forms at their leisure".

Cooperation with surrounding society

All of the 12 institutions are involved in cooperation and knowledge sharing with the surrounding community. Two thirds of them (5 with a strategy and 4 without) are involved with institutions within the public sector and half (4 with and 2 without a strategy) are involved with other knowledge organisations. Half of the institutions with a strategy are also involved with newly started businesses /entrepreneurs and this is only the case for one of the institutions without a strategy. However, when it comes to involvement with established businesses/industry, more institutions without a strategy (3) engage in this than institutions with a strategy (2).

Extra-curricular activities

4 out of 6 institutions without a strategy do not offer any extra-curricular activities that strengthen the entrepreneurial competences and mind-set of students. Most of the institutions with a strategy (except one) provide this. Half of the institutions with a strategy provide incubator activities, other forms of advice and guidance for student start-ups as well as entrepreneurship education given by entrepreneurs. They also organise networks between students and entrepreneurs/business industry.

Practice

This area is about topics that concern actual teaching forms and programmes, feedback, materials and teachers' aids.

Half of the institutions (2 with and 4 without a strategy) in Iceland have access to materials and teachers' aids, which can support their teaching in innovation and

entrepreneurship. Even more (2/3) have experience with actual teaching forms and programmes within entrepreneurship (5 institutions with a strategy and 3 without). However, only half of the institutions in the survey continuously validate and revise the learning objectives for entrepreneurship teaching with a view to updating their teaching programmes. 25% of the institutions develop their curriculum in cooperation with external stakeholders in order to get input concerning useful competences in future. Only one of the institutions (with a strategy) measures the impact of the entrepreneurship teaching before, during and after the course/teaching.

Micro level

The micro level concerns the implementation level, that is, the actual teaching taking place in educational institutions and the spread of this form of education, that is, how many students participate in this form of education on the island.

In the early phases of the development of a national strategy for entrepreneurship education, this level relies strongly on individual teachers' enthusiasm. Teacher training is limited with no or little in-service training. But as the island or country develops their activity in the area of entrepreneurship education, measures on the micro level become more systematised, the teachers' central role is increasingly recognised, good practice examples are identified, and teaching materials are being elaborated. In the more advanced stages, teachers are making increased use of national/regional or local support mechanisms such as training or exchange platforms. More teachers follow the good examples and are engaging with the entrepreneurship education agenda. This development is of course faster and easier when the management of the national education institutions have a clear focus on and agenda for working in this field.

This chapter maps entrepreneurship education from the perspective of teachers in upper secondary education, vocational/VET and tertiary level education, on different parameters.

The share of pupils and students, who has received entrepreneurship education, is calculated on the basis of the total number of pupils and students on the island. It must be emphasised that this share may be inaccurate, as it is based on the responses received. There may be other Icelandic pupils and students who participate in entrepreneurship education but whose teachers did not participate in the survey.

Upper secondary education

At the upper secondary level, data have been collected by means of a questionnaire for the teachers. The purpose of the survey is to map the number of pupils in upper secondary education who participated in education or activities leading to increased competence levels in innovation and/or entrepreneurship in the school year 2015/2016.

The questionnaire is divided into four main categories.

Basic information consists of two questions about whether the teachers perceive that the school has a clear policy of integration of innovation and entrepreneurship in the education. The responses to these questions thus indicate a score that reflects the extent to which this is the case.

Taxonomy contains the following four dimensions: *action, creativity, environment* and *attitude*.¹⁷⁶ These terms refer to entrepreneurial competences, which are not necessarily a subject or subject knowledge in themselves but are competences to set initiatives in motion and create opportunities. As such, a high score in the teachers' perceptions of the fulfilment of these four indicators is desirable. The score in the four dimensions of the pupils and students who have received entrepreneurship education is compared to the scores of the pupils and students who have not received entrepreneurship education.

Entrepreneurship and setting things in motion is the foundation of entrepreneurship education. The total number of pupils and students having received entrepreneurship education in any given area is comprised of all teachers who have answered the questions regarding whether the pupil or student has received instruction in starting a business and/or tried starting up and gained experience starting a business affirmatively.

Entrepreneurship education, which is the percentage of pupils and students who have received entrepreneurship education, is calculated from the total number of pupils and students on the respective islands/areas. As mentioned above, reservations are taken about the accuracy of this share.

In Table 1 below, the overall results for the upper secondary level are presented. The scale from 1–7, which was used in the survey, has been converted to a new scale, which spans from 1–100. This ensures that all answers in the survey can be compared.

A total of 9 teachers have answered the survey. All together, they represent 206 students from 10 classes. Overall, 92 pupils at the upper secondary level in Iceland have encountered entrepreneurship education in the 2015/2016 school year.

¹⁷⁶ Please see "A Taxonomy of Entrepreneurship education" for further elaboration on the entrepreneurial dimensions.
<http://eng.ffe-ye.dk/media/555477/taksonomi-eng-2.pdf>

As is evident in Table 1, the teachers only experience a clear policy on innovation and entrepreneurship to a lesser degree. The score for this question is 22 and 18, respectively, which is below the average of 26 and 27, respectively.

However, the teachers answer that 40% of the classes have participated in entrepreneurship education while 30% of the classes have realistic experience with starting up businesses.

Table 1: The results for upper secondary education, Iceland

Subject	Variable	Iceland
Basic information	Policy on innovation	22
	Policy on entrepreneurship	18
Taxonomy	Action	40
	Creativity	46
	Environment	32
	Attitude	37
Entrepreneurship	Teaching in start-up percentage	40
	Realistic experience with start-up, percentage	30
Entrepreneurship education	Number of students receiving entrepreneurship education	92
Score for students receiving entrepreneurship education	Action	68
	Creativity	58
	Environment	59
	Attitude	54
Score for students <i>not</i> receiving entrepreneurship education	Action	22
	Creativity	38
	Environment	13
	Attitude	25

Note: The result is comprised of answers from 9 teachers with a total of 10 classes and 206 students.

Just as the results from the other countries demonstrate, the results from Iceland show that pupils who have received entrepreneurship education score higher on all parameters concerned with entrepreneurial competences. Here, students receiving entrepreneurship education scored double that of students not receiving entrepreneurship education for *action*, *environment* and *attitude*.

Vocational/VET

At vocational/VET level data have been collected by means of a questionnaire directed at the teachers. The purpose of the survey is to map the number of pupils in vocational/VET who in the school year 2015/2016 participated in education or activities leading to increased competence levels in innovation and/or entrepreneurship.

The questionnaire is divided into four main categories.

Basic information is comprised of two questions. They concern whether the teachers experience that their school has clear policies on innovation and entrepreneurship in education, respectively. The scores for these questions thus reflect to what degree that is the case.

Teaching, which focuses on the degree to which the teachers experience that the students have participated in innovation and entrepreneurship education in class instruction and courses, as clear subjects in their practical training and internships as well as clear subjects in their apprenticeship tests.

Entrepreneurship and setting things in motion is the foundation for entrepreneurship education. The teachers were asked whether the pupils have participated in feature weeks, camps, projects or the like focusing on innovation and entrepreneurship, respectively. In addition, the teachers were asked whether the pupils had participated in other innovation or entrepreneurship projects. If the answer is yes to any of these questions, the pupils are included in the total number of pupils and students, who receive entrepreneurship education. As such, there are three different questions, which all play a part in determining whether the pupils have received entrepreneurship education.

Entrepreneurship education thus indicates the number of pupils who, based on the abovementioned questions, receive entrepreneurship education. The share of pupils and students who have received entrepreneurship education is based on the total number of pupils and students on the respective islands/areas. Again, and as mentioned above, reservations are taken about the accuracy of this share.

In Table 2, the overall results for vocational/VET are presented. The scale from 1–7, which was used in the survey, has been converted to a new scale, which spans from 1–100. This ensures that all answers in the survey can be compared.

The results in Table 2 show that the teachers find that there is a relatively clear policy on innovation and entrepreneurship in particular. The respective scores of 39% and 44% are both above the average of 33% and 32%, respectively.

With regard to the teaching situation, the teachers find that the pupils have had innovation as an obvious and clear topic in their practical training and internships compared to during class instruction. However, the opposite is the case with regard to entrepreneurship, which has been more present in class and less so during the pupils' practical training.

Table 2: The results from vocational/VET Iceland

Subject	Variable	Iceland
Basic information	Policy on innovation	39
	Policy on entrepreneurship	44
Teaching	Innovation in subject/course	28
	Innovation as a clear topic in practical training/apprenticeship	33
	Innovation as a clear topic in apprenticeship test	-
	Entrepreneurship in subject/course	44
	Entrepreneurship as a clear topic in practical training/apprenticeship	33
	Entrepreneurship as a clear topic in apprenticeship test	-
Entrepreneurship	Innovation, percentage	67
	Start-up of business / Entrepreneurship, percentage	33
	Other, percentage	33
Entrepreneurship education	Number of students receiving entrepreneurship education	45

Note: The result is comprised of answers from 3 teachers with a total of 3 classes and 73 pupils.

67% of the total number of classes have participated in feature weeks, camps, projects or the like focusing on innovation, whereas the amount of classes who have participated in similar feature weeks, camps etc. with a focus on business start-up and entrepreneurship is 33%. This is also the percentage of classes who have participated in other innovation or entrepreneurship programmes.

All in all, 45 pupils have received entrepreneurship education with a focus on innovation and/or entrepreneurship in the vocational/VET schools in Iceland. None of the pupils in this study have completed final apprenticeship tests focusing on innovation or entrepreneurship.

Upper secondary and vocational/VET

Overall, 137 pupils in the survey at upper secondary education and vocational/VET in Iceland have encountered entrepreneurship education in the 2015/2016 school year. However, after further information from JA Iceland it is confirmed that at least 312 pupils have participated in Company Programme (an entrepreneurship education programme) in Iceland the same year and this is thus the most correct number.

312 pupils is the equivalent of 1.2% of the 26,513 pupils in upper secondary education and vocational/VET in Iceland. It is, of course, important to keep in mind that the low number of answers may have an effect on the result in Iceland.

In comparison, a mapping in the 2014/15 school year shows that 36.9% of pupils in upper secondary education and vocational/VET in Denmark participated in

entrepreneurship education.¹⁷⁷ However, this percentage includes pupils and students receiving teaching materials published by the Danish Foundation for Entrepreneurship (hand-outs as well as downloads) in Company Programme as well as in particular educational activities such as regional projects, supported projects, competitions etc.

Tertiary education

For the purpose of mapping entrepreneurship education at the tertiary education level, the islands were asked to send course descriptions of courses within innovation and entrepreneurship or courses that resemble this kind of teaching at this level along with the number of students partaking these courses during the academic year 2015–16. The received course descriptions were then screened on the basis of the categories in the Star Model – a model for identifying entrepreneurship courses.

In the Star Model courses and subjects are categorised according to how much focus they place on the individual categories of the model. Apart from identifying a course or subject as entrepreneurship education, the model can be used to obtain an image of how much emphasis is put on entrepreneurship in the form of content or teaching methodology in a course/subject. The model and method is used exclusively to identify the extent to which the course/subject focuses on entrepreneurship, it is not an evaluation or assessment of the quality of the course/subject as such.

Iceland has several entrepreneurship education courses at the tertiary level. Table 3 lists the courses offered at Icelandic tertiary educational institutions and the number of students in the two semesters of the academic year 2015–16.

¹⁷⁷ <http://www.ffe-ye.dk/media/783586/samlet-notat-omkring-kortlaegningstal-2014-15.pdf>

Table 3: The results for the tertiary level in Iceland

Institution	Course	Students Fall 2015	Students Spring 2016
University of Akureyri	Product development and innovation		48
University of Iceland	Field Course in Innovation and Entrepreneurship 1	15	
	Field Course in Innovation and Entrepreneurship 2*		14
	Entrepreneurship and Innovation		31
	Theoretical Foundations of Innovation and Entrepreneurship	26	
	Women and men as leaders, entrepreneurs and administrators		0
	Innovation in Tourism		62
	Innovation and technology in welfare	0	
	Creativity and innovation in textiles	0	
	Innovation – business idea development, project management and gathering of resources	0	
	Innovation, product development, marketing		24
	Education, innovation and employment	0	
Reykjavik University	Innovation and practical applications: environment and natural resources		0
	Management of innovation		0
	Entrepreneurship and starting new ventures		326
	Entrepreneurial finance		11
	Becoming entrepreneur	0	
University of Bifröst	Innovation	0	
	How to start a Start-up	48	
	Innovation and development of safe and wholesome fish products		0
	Innovation and entrepreneurship	28	
Hólar University	Financial opportunities	18	
	Product development and innovation		26
Agricultural University of Iceland	Entrepreneurship		0
Iceland Academy of the Arts	Project management and Entrepreneurship	25	
Total		160	542

Note: * The courses Field Course in Innovation and Entrepreneurship I and II are two parts of the same course, so the students following these courses are the same and should only be counted once.

A total of 688 students participated in innovation and entrepreneurship related courses in the past academic year (the 14 students in the “Field Course in Innovation and Entrepreneurship 2” have been deducted, because we assume they participated in “Field Course in Innovation and Entrepreneurship 1”). We do not know if other students may have been counted twice.

The total number of students at the tertiary level in Iceland in 2015–16 is 19,163. The 688 students in entrepreneurship education in that year thus equal 3.6% of all

tertiary students in Iceland. In comparison, the percentage of Danish tertiary level students who participated in entrepreneurship education was 13.7% in 2014–15. The percentage of Danish tertiary level student who participated in entrepreneurship education in 2015–16 is 15.8 %.

Micro Grant

Since 2011, the Danish Foundation for Entrepreneurship has awarded Micro Grants to students at upper secondary and tertiary level with entrepreneurial ambitions. Initially the Micro Grants initiative was a pilot project but, since 2014, the Micro Grant initiative has taken the form of a larger programme. The Micro Grant should be viewed as an extra-curricular initiative and thus as a continuation of entrepreneurial education and the competences which the students obtain through their education. The objectives of the Micro Grant Initiative are to enhance growth and employment. By supporting student start-ups, the long-term objective is to create growth companies that can contribute with more jobs, export incomes and societal growth. On a yearly basis, approx. 250 applications are submitted (corresponding to approx. 1,000 students) in Denmark, and approx. 65% of them have participated in entrepreneurship education. 70 grants (DKK 2.5 million) are handed out on a yearly basis.

Analysis shows that the Micro Grant Initiative has a catalytic effect and contributes to enhancing employment in Denmark.¹⁷⁸ Only 4–12 months after receiving a Micro Grant 50 grant recipients created the equivalent of 79 full-time positions in Denmark. Put in another way: For every million invested more than 40 full-time positions have been created in the period. Micro Grant recipients also actively seek new capital after receiving a grant. Two out of three grant recipients have had contact with private investors after they received the Micro Grant. Nine grant recipients have achieved growth capital (up to DKK 2.3 million) within 4–12 months. None of the control group achieved further growth capital in the period.

In Iceland there are 34 upper secondary education institutions and 7 tertiary education institutions. The total number of students in the school year 2015–16 is 45,676. Financial support for student start-ups is already available in Iceland through Start-up Reykjavik. This is, however, not only for student start-ups.

During the project trial granting Micro Grants of DKK 25,000 in Iceland, two applications from student start-ups were received. Normally, a student start-up is

¹⁷⁸ <http://www.ffe-ye.dk/media/699249/effektmaaling-mikrolegater-oktober-2015.pdf>

comprised of 2 to 6 pupils or students. The team that received the grant is comprised of students who all completed an entrepreneurship course in Reykjavik University in May 2016. The Micro Grant was marketed on Facebook (JA Iceland and Innovation Center Iceland), on the website of Innovation Center Iceland and through direct e-mail to all Icelandic universities/higher education institutions.

Effects

For the student start-up, the Micro grant has had a range of effects. They say:

“Receiving the grant helped us a lot. The grant made it possible to start quickly and that is great for a young start-up. As it is today we haven’t had to get any financing because the grant helped us pay our big start-up cost. The plan was always to start and work on the company in Iceland in the beginning and then later if everything would work out then we would go to the Nordic countries. Everything is happening now, the business is starting and the grant helped us prepare everything much better than we could have done if we hadn’t had the grant. So, it has had good effects on the development of the company”.

Derivative effects for the island and local community as a consequence of the idea are:

“The idea has had good effects on the community by helping foreign students finding a place to stay while they live and learn in Reykjavik. It makes it easier to find a place to stay and that makes more people want to come, learn and live in Reykjavik, because it is hard to find a sleeping place in Reykjavik”.

Needs and possibilities

The team is very satisfied with the help and inspiration they have received during their early stage. However, they express that they need team members with different skills like web development/ programming knowledge and skills, and it can be a challenge to find such people. Matchmaking events etc. could be the answer.

Micro Grant recipient

Rentmate

Rentmate is a platform for international students to connect with each other to share accommodation during their stay in Iceland. The revenue will be generated by charging the landlord a 7% commission fee of the rent. We already have bookings from 64 students for accommodation during this fall semester.

The grant was used for web development, insurance and logo development.

Future entrepreneurial potential

Even though the total population in Iceland is growing and the general employment rate is relatively high, the youth unemployment of 16% is a percentage worth taking into consideration when talking entrepreneurship education in Iceland. Fortunately, the education level is relatively high in Iceland and the number of young people who gain a secondary or tertiary level education is growing. This creates a solid basis and a huge potential for implementing entrepreneurship education in Iceland.

Based on the objective of creating solutions that will entail positive effects for Iceland, the first objective of this pilot project was to ensure a mapping of entrepreneurship education in the area. There is no or only limited prior data available for mapping entrepreneurship in the educational sector in Iceland. Knowing the present situation on the island the second objective has been to define the potential for entrepreneurship education and Micro Grants in Iceland from 2016/2017 to 2020/2021. This forecast includes economic measures and is based on six years of experience and development rates from the Danish Foundation for Entrepreneurship.

The ambition in the long term is that new companies will follow from initiatives implemented and more students will obtain skills and competences that will enable them to create and establish new companies. Thus, the aim is that young people in Iceland learn how to act on opportunities and good ideas and how to convert these ideas into economic, social and/or cultural value for others. As a whole, the continuation of this pilot project is about enhancing the market position of Iceland internationally and contributing to a sustainable development, growth and jobs.

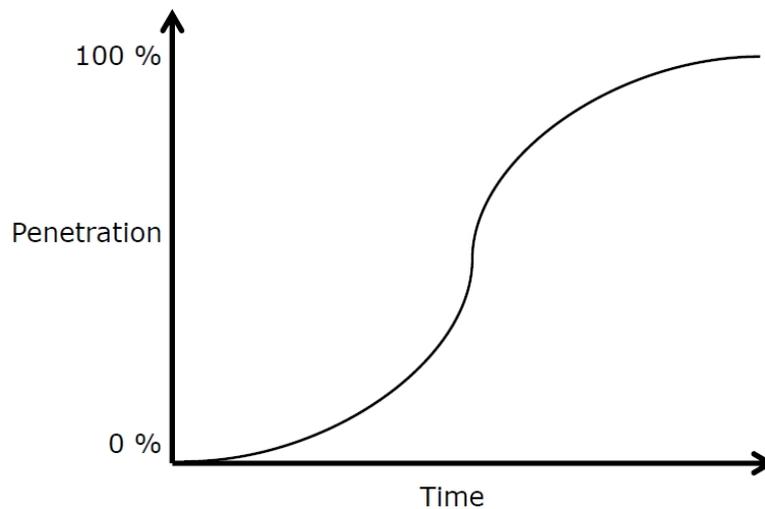
Forecasting entrepreneurship education and Micro Grants for Iceland

This pilot project is the first step in securing a solid foundation for implementing and anchoring future initiatives in Iceland. The quantitative objective is to ensure that young people at different educational levels will engage in entrepreneurship education at least once during their education and that resources for student start-ups are available.

Vital for this development is an informed forecast in terms of the possible percentage increase in students receiving entrepreneurship education, student start-ups receiving a Micro Grant and the annual costs to obtain this increase over a period from 2015/2016 to 2020/2021.

When looking at the penetration rate for entrepreneurship education it develops according to an S-curve (Figure 1). Iceland is in the initial stage of the S-curve.

Figure 1: S-curve for entrepreneurship education penetration rate



The forecast is presented in Table 4 and Figure 2 below.

The forecast is based on:

- The data collection and findings in this report.
- Stakeholder insights and comments from Iceland.
- The maturity level on the island with regard to entrepreneurship in education (The "s-curve").

- Development rates from Denmark and Bornholm (2010–2016).
- The average of total costs per student during the last three years in Denmark (including development, Micro Grants and administration/operation costs e.g. salary, travel expenses, communication etc.).

And the forecast is based on the assumptions that:

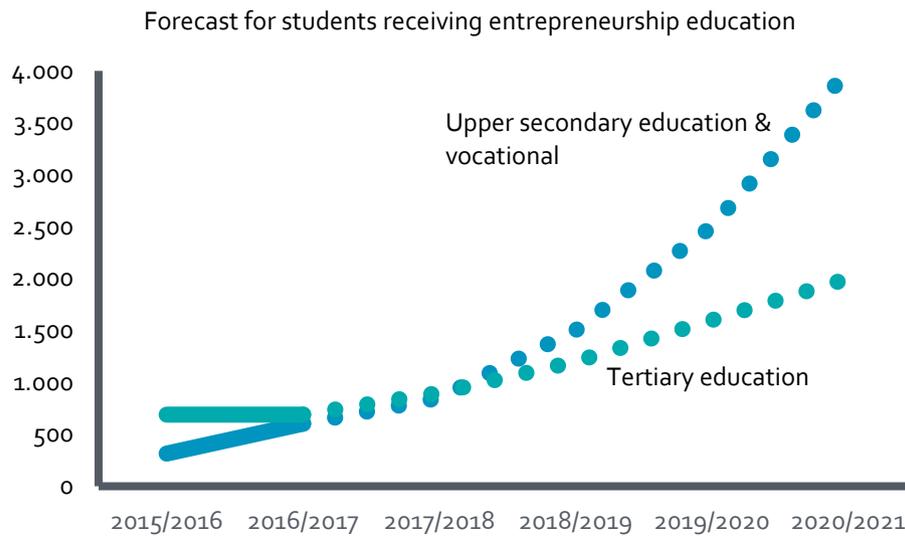
- There are no changes from school year 2015/2016 to 2016/2017.
- The number of students is constant.
- A percentage increase in the number of students receiving entrepreneurship education which corresponds to the historic percentage increase in Denmark.
- Annual costs per student corresponding to the annual costs per student in Denmark (based on the average of total costs during the last three years).

It is important to bear in mind that the forecasts cannot be made with 100% accuracy, but are estimates.

Table 4: Forecast for Iceland

Forecast for entrepreneurship and micro grants until the school year 2020/2021						
	2015/2016	2016/2017	2017/2018	2018/2019	2019/2020	2020/2021
Upper secondary education & vocational/VET						
Students in total	26,513	26,513	26,513	26,513	26,513	26,513
Students receiving entrepreneurship education, forecast	312	600	850	1,500	2,500	4,000
Share of students receiving entrepreneurship education, percentage	1.2%	2.3%	3.2%	5.7%	9.4%	15.1%
Tertiary education						
Students in total	19,163	19,163	19,163	19,163	19,163	19,163
Students receiving entrepreneurship education, forecast	688	688	900	1,200	1,600	2,000
Share of students receiving entrepreneurship education, percentage	3.6%	3.6%	4.7%	6.3%	8.3%	10.4%
Applicants receiving a grant						
Accepted applicants	1	3	5	6	8	10
Average annual costs (4 years) in DKK	DKK 3,900,000–4,300,000					

Figure 2: Forecast for Iceland



Recommendations for Iceland

- A national strategy and a cross-ministerial collaboration are necessary means to build a strong foundation for developing regional and island strategies. There is no national strategy for entrepreneurship education in Iceland. A higher political commitment to the area is required in order to create an overall national strategy for entrepreneurship education covering all education levels. Hence it is recommended to take the entrepreneurship education agenda to the political and strategic level in order to ensure a policy platform and priority of the area from the top level and to start planning a structure for implementation at the national level. Experiences from other countries show that the development of a national strategy for entrepreneurship education with a specification of clear responsibilities of key actors on both policy and implementation levels helps to gain an overview of the area, to systematise efforts and initiatives, and to benefit from synergies between the different initiatives. Furthermore, such a strategy should contain clear indicators and evaluation measures for the strategy. A national strategy for entrepreneurship education should also set clear objectives for each education level, which would help to integrate entrepreneurship education more systematically at all levels and in all types of education, as well as contain measures for teacher training.

- A national operator/ responsible organisation is important to secure implementation and make the link between political level and the educational sector. There are already several bottom-up initiatives and stakeholders involved from many levels of society in Iceland and they have been working with entrepreneurship and entrepreneurship education for many years. Iceland has therefore many experiences with entrepreneurship and a ready network of key actors on the area. This constitutes an important resource, which should be utilised and incorporated in future initiatives in the entrepreneurship education area. The political commitment, however, must go hand-in-hand with a structured approach (not only ending up as a network between existing operators) to the coordination of actions and measures on all education levels – and this preferably through one national operator.
- A specifically dedicated budget for development and activities is necessary. There are only limited resources for entrepreneurship education and no resources for student entrepreneurs in Iceland. Financial resources should be allocated both at national and local level (on the island). This should be a collaborative effort between public and private sector.
- Strong stakeholder relations are essential. Private sector, public sector and the educational institutions should cooperate when implementing the national and regional strategies. This could take form as a cross-sector board in a national/regional organisation.
- Promote entrepreneurship and entrepreneurship education. An important part of the efforts at national level is to communicate broadly the focus on, and goals for, entrepreneurship education to all important stakeholders in the Icelandic society; educational institutions, teachers, students, parents as well as private and public sectors and local and regional authorities. Entrepreneurial role models with differences in gender, industries, size of start-up etc. can play a part in this promotion, in collaboration with the media. According to JA Iceland their recent re-launch is expected to increase both the overall awareness of entrepreneurship education (amongst schools and policymakers) as well as the numbers of students being exposed to entrepreneurship education in Iceland – especially at upper secondary level. However, the promotion should also come from political and authority level.
- Support and collaboration with schools and educational institutions at all levels. Danish research shows that to achieve the greatest effects entrepreneurship education must be differentiated on the respective levels of education and must be provided to pupils as early as possible during their education. Entrepreneurship

in higher education is the most effective way to foster long-run student start-ups. As it is now, entrepreneurship education in educational institutions in Iceland mostly takes place in specialised business schools at the upper secondary and tertiary levels, or as an extracurricular course or “add-on” to the normal teaching, e.g. competitions in primary and secondary schools and an optional subject at university.

- Collecting data to secure knowledge on the development in penetration of entrepreneurship education should not be underestimated. Mapping entrepreneurship education and later on compiling impact studies is vital for the support from ministries and private sector.
- Involvement from school management and building strategies at education institution level is essential. School management provides the very important link between a national/regional strategy level and implementation level in the form of teachers who teach entrepreneurial skills to pupils and students. Contributing to a (new) ideal of education where students learn to act in an entrepreneurial and innovative way is not only a pedagogical and didactical exercise, it is also a managerial and organisational practice. This mapping shows that school management in Iceland believe that strategies and goals for entrepreneurship education are important. The reason why only a few have implemented a strategy might be due to the lack of incentives for the management and the lack of a national strategy.
- Communicating the educational institutions’ entrepreneurship strategy to all stakeholders both internally (teachers and students) and externally to collaborating partners outside the institution is essential for the strategy to have any impact on the penetration rate for entrepreneurship education on the island.
- A plan and resources for providing and ensuring the teachers the necessary competences on the area are necessary elements from the beginning. There are resources for entrepreneurship teachers’ competence development (e.g. further education in entrepreneurship teaching and networks) in Iceland. A sustained effort is needed to embed entrepreneurship education in every-day teaching. Implementing requirements on entrepreneurial learning objectives at all levels can be a part of this effort. Teacher training in entrepreneurship education should supplement this. At the moment, teacher training exists almost only as brief teacher training that JA Iceland provides for as part of Company Programme. Furthermore, there appears to be a lack of entrepreneurship education teaching materials in Iceland. In general, teachers do not have enough support to start practicing entrepreneurship education.

- Through JA Iceland, Iceland has access to Junior Achievement programmes and country specific teaching programmes, all of which are tested and well-functioning entrepreneurship teaching programmes. Studies show that JA programmes subsequently create significantly more entrepreneurs and higher income and they have a positive impact on pupils' motivation to study, their school engagement and their academic confidence and they have a positive impact on the primary school pupils' grades.^{179, 180, 181}
- Extra-curricular entrepreneurship activities such as; incubators, business plan competitions and advice and guidance for student start-ups could be a supplement to the curricular teaching and thus function as a job creator. This is particularly relevant for educational institutions at tertiary level.
- A small financial aid (Micro Grant) to student start-ups in the initial phases of the start-up process has proved (in Denmark) to have a catalytic effect and contributes to enhancing employment. The recipients of the grant also actively seek growth capital after receiving a grant. This could supplement the entrepreneurship teaching and help create new start-ups on the island. However, it takes time before students become accustomed to applying for this grant.
- Whenever possible, synergies across the Nordic islands should be utilised.

¹⁷⁹ Elert, Andersson & Wennberg (2015) developed a propensity score matching on three cohorts of Company Programme pupils, who had finished their training 11 years earlier. 10,103 CP-pupils were matched with 214,735 non CP-pupils.

¹⁸⁰ Johansen (2008) conducted a survey on 1,400 9th grade pupils and 1,700 VET pupils.

¹⁸¹ Johansen and Schanke (2014) conducted a survey on 1,880 secondary pupils and 1,160 primary school pupils who participated in Junior Achievement's programmes.

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Appendix A. A Progression Model for Entrepreneurship Education Ecosystems in Europe¹⁸²

Table 5: A Progression Model for Entrepreneurship Education Ecosystems in Europe

Stage	Pre-Strategy (based on individual initiative)	Initial Strategy Development	Strategy Implementation and Consolidation & Development of Practice	Mainstreaming
Indicative timeframe	Starting position	0–2 years	c. 2–5 years	c. 5 years +
National strategy, ¹⁸³ frameworks	No formal strategy in place. Entrepreneurship education covered – if at all – in disparate policy documents. Little or no effective inter-ministerial cooperation. No or rudimentary platforms for dialogue with relevant social partners.	Development and promulgation of strategy, with identification and agreement of entrepreneurship education objectives and of competences, roles and responsibilities of key players. Mechanisms being established for cooperation between key ministries. Platforms being established to include wider stakeholders. Vision (and intended outcomes) in process of being determined, which may involve reconciling competing agendas within government and between public and private sectors etc. Mapping and analysis of entrepreneurship education. Good practice examples being identified. Collection of effective teaching methods and materials. Launching of communications campaigns to stimulate interest of business community. Awareness raising with teachers.	Specification of learning outcomes, objectives, indicators and targets. Methods being developed for assessing learning outcomes; and development of appropriate qualifications. Regular cooperation mechanisms being embedded at various levels of system, with relative roles and responsibilities of different stakeholders clearly defined and accepted. Development of funding streams: allocation of dedicated resources. Implementation support mechanisms being put in place. Resource banks of teaching materials available. Dissemination and broad-based application of the effective teaching methods identified. Research base being developed.	On-going monitoring and regular evaluation of entrepreneurship education in terms of quality of activity and learning outcomes being achieved. Implementation support mechanisms part of everyday teacher and school development; entrepreneurship education fully integrated into initial teacher training for every teacher. Continuous application and refinement of effective teaching methods. Robust funding mechanisms established.

¹⁸² *Towards Greater Cooperation and Coherence in Entrepreneurship Education*, European Commission, 2010.

¹⁸³ Or regional strategy and frameworks depending on governance structures.

Stage	Pre-Strategy (based on individual initiative)	Initial Strategy Development	Strategy Implementation and Consolidation & Development of Practice	Mainstreaming
Indicative timeframe	Starting position	0–2 years	c. 2–5 years	c. 5 years +
Schools	Penetration of entrepreneurship education highly variable; much ad hoc activity. Tends to be an “add-on” to the mainstream curriculum with emphasis on “entrepreneurship” as running a business. Tends to be focused in secondary education and in specific subjects. No or sporadic formal assessment of learning outcomes. Use of (unaccredited) prizes and awards to recognize achievement.	Role of schools articulated in strategy – recognition of central role. Entrepreneurship education starting to be developed across the curriculum as an embedded set of competences, not just as a separate subject. Development of entrepreneurship education beyond secondary level especially, e.g. at primary level: and school clustering.	Entrepreneurship education being made available in every school, embedded within the curriculum as part of the overall teaching concept and also as a separate subject. Progressive establishment of partnerships with businesses in all schools (e.g. through pilots).	High quality entrepreneurship education being made available to every student in every phase/type of education. Clear linkages established between different phases/types of education. Progressive development of wider linkages as part of development of local entrepreneurship ecosystem. Learning outcomes assessed.
Teachers	Strong reliance on individual teacher’s enthusiasm. Entrepreneurship education often delivered outside core school hours as extra-curricular activity. Teacher training very limited. No or little in-service training.	Role of teachers articulated in strategy – recognition of central role. Good practice examples being identified: teacher training; teaching materials.	Teachers making increasing use of national/regional and local support mechanisms (e.g. training or exchange platforms). Use of pilots to spread good practice and increase numbers of teachers engaging with entrepreneurship education agenda. Initial or in-service training on entrepreneurship made available to all interested teachers.	All teachers receiving entrepreneurship education as an integral part of their initial and their continuous in-service teacher training. All teachers teaching entrepreneurship education as integral part of the curriculum.
Regional and local authorities ¹⁸⁴	Patchy involvement: some authorities involved in development of local partnerships; others not involved at all.	(Potential) role of local authorities considered in strategy development process. Development of good practice examples of school clusters and education-business partnerships at local level.	Local authorities playing an increasingly important role in school cluster development and education-business links.	Full participation of local authorities in organising entrepreneurship education. Possible establishment of statutory requirement for organisation of partnerships based on municipality geography.
Businesses, private associations and organisations	Involvement of businesses tends to be patchy, unstructured, and often reliant on individual initiative by parents. Use of programmes developed by private organisations (e.g. JA) tends to be ad hoc on individual school basis but plays vital role in providing essential experiential and “hands-on” learning.	Key role of businesses and private organisations articulated in strategy. Businesses (increasingly) involved through social partner organisations in policy development and in delivery of entrepreneurship education in schools.	Consideration of potential to upscale the role played by businesses and private organisations in entrepreneurship education: extension and deepening of that role. Businesses being more systematically engaged at local level – movement away from ad hoc approaches to establishment of mechanisms for brokerage and establishment of long-term, sustainable relationships with schools.	Full participation of businesses in entrepreneurship education in all schools/universities. Businesses support for entrepreneurship education at all levels increasingly delivered through structured channels, e.g. education-business partnerships, organised brokerage.

¹⁸⁴ The role of regional and local authorities depends on the distribution of responsibilities between tiers of government.

Appendix B. “The Star Model” – a method for identifying entrepreneurship education

“The Star Model” was developed by Øresund Entrepreneurship Academy with the purpose to identify and quantify entrepreneurship education courses in Danish universities. It was later updated by the Danish Foundation for Entrepreneurship to use for short and medium-length tertiary educations also.

Courses and subjects are categorised and given 1–3 stars according to how much focus they put in the individual categories of the model. Apart from identifying a course or subject as entrepreneurship education, the model can be used to get an image of how much emphasis is put on entrepreneurship in the form of content or teaching methodology in a course/subject. The model and method is used exclusively to identify the extent to which the course/subject focuses on entrepreneurship, it is not an evaluation or assessment of the quality of the course/subject as such.

Table 6 below illustrates the overall structure of “the Star Model” which consists of two dimensions 1) Teaching design and 2) Phases in the entrepreneurial life cycle. The categories under Teaching design on the horizontal axis are divided into two main categories each of which describes the subject content and teaching approaches and methods, which together form a unifying concept for the pedagogics, didactics and methods which characterise the teaching or education. The categories on the vertical axis describe the phases in the entrepreneurial life cycle. To read more about the Star Model, see the report about examination forms, *Eksamensformer*, on the website of the Danish Foundation for Entrepreneurship.¹⁸⁵

¹⁸⁵ <http://www.ffe-ye.dk/videncenter/entreprenorskabs-undervisning/eksamensformer>

Table 6: The Star Model

Teaching design								
Subject-related content					Teaching approaches and methods			
Phases/ Categories	Intrapre- neurship	Entrepre- neurship	Finance/ VC	Law	Practical dimensions	Student participation	Interdisci- plinary	International dimensions
Idea								
Beginning								
Growth								
Running								

Appendix C. Demographic data on the seven islands

Table 7: Population changes (increase and decrease) in % between 2009 and 2015

Unit	Changes in total population	Changes in population aged 0–24	Changes in population aged 25+	Changes female ratio	Youth dependency changes*			Old age dependency changes**		
	2009–2015	2009–2015	2009–2015	2009–2015	2009	2015	Change	2009	2015	Change
Norway	7.6	6.0	8.4	-1.6	28.7	27.4	-4.4	22.1	24.5	10.9
Andøy	-0.8	-2.0	-0.4	-2.3	29.0	25.3	-12.7	33.2	37.9	14.1
Finland	2.7	-0.7	4.2	-0.6	25.2	25.7	2.2	25.2	31.3	24.2
Pargas	0.5	-2.3	1.7	-0.5	27.1	27.8	2.6	30.9	40.0	29.5
Denmark	2.7	.6	2.8	-0.4	27.8	26.4	-5.0	24.1	28.8	19.5
Bornholm	-6.4	-14.3	-3.6	-0.7	25.5	23.0	-9.6	33.2	44.6	34.5
Faroe Isl	-0.9	-4.3	0.9	1.4	34.4	34.5	0.4	22.2	26.9	20.9
Greenland	-0.3	-7.9	4.6	1.0	32.9	29.8	-9.4	9.3	10.7	15.2
Sweden	5.3	4.8	5.5	-1.0	25.4	27.3	7.4	27.1	31.1	14.8
Gotland	0.4	-4.8	2.6	-0.7	22.9	24.6	7.3	31.0	39.2	26.5
Iceland	4.1	0.9	4.2	2.2	30.9	30.8	-0.3	17.2	20.5	19.2

Note: * population aged 0–14 as a share of population aged 15–64.
 ** population aged 65+ as a share of population aged 15–64.

Kilde: National statistical institutes and Eurostat.

Table 8: Increase and decrease in employment and education rates of the population 2009–2013

Unit	Employment rate*			Unemployment rate**			Youth unemployment rate***			Tertiary education****
	2009	2013	Change	2009	2013	Change	2009	2013	Change	2014
Norway	76.6	75.6	-1.3	3.2	3.5	9.4	9.2	8.6	-6.5	
Andøy	75.6	72.8	-3.7	2.8	4.8	71.4		12.7		26.6
Finland	68.4	68.4	0	8.4	8.4	0	21.5	19	-11.6	
Pargas	74.5	73.2	-1.7	4.9	4.6	-6.1		14.3		43.2
Denmark	75.1	72.3	-3.7	6.1	7.2	18.0	11.8	14.1	19.5	
Bornholm	68.8	69.3	0.7	8.9	8.9	0		19.7		23.7
Faroe Isl	88.1	90.8	3.1	4.8	3.9	-18.8		9.9		35.9
Greenland	64.9	63.3	-2.5	7.5 (2010)	9.7	29.3		17		14.4
Sweden	72.4	74.5	2.9	8.5	8.3	-2.4	25	23.7	-5.2	
Gotland	74	77.4	4.6	8	6	-25				31.1
Iceland	78.3	81.1	3.6	7.2	5.4	-25	16	13.6	-15	

Note: * number of employed persons as a share of the population aged 15–64.
 ** total number of unemployed persons as a share of the labour force (labour force is made up by the total number of persons employed or looking for a job).
 *** unemployed persons aged 15–24 as a share of the labour force aged 15–24.
 **** persons with a tertiary education as a share of the population aged 25+.

Sources: National statistical institutes and Eurostat.